Velocityrgb

Video Extension Systems

Video Extension System -9, -10 & -12

PRODUCT MANUAL

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thinklogical®

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Subject: VelocityRGB Video Extension System-9, -10 and -12
Revision: D, December 2012

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PREFACE

Conventions Used in this Manual

Throughout this manual you will notice certain conventions that bring your attention to important information. These are **Notes** and **Warnings**. Examples are shown below.

Note: Important Notes appear in blue text preceded by a yellow exclamation point symbol, like this.

A note is meant to call the reader's attention to helpful information at a point in the text that is relevant to the subject being discussed.

Warning! All Warnings appear in red text, followed by blue text, and preceded by a red stop sign, like this.

A warning is meant to call the reader's attention to critical information at a point in the text that is relevant to the subject being discussed.

BEFORE STARTING ANY PROCEDURE, IT IS RECOMMENDED THAT YOU READ THE INSTRUCTIONS THOROUGHLY!

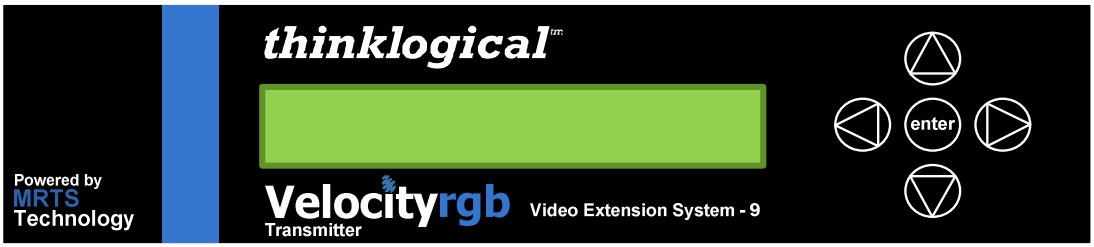
1 Introduction

1.1 Product Overview

Industry standard RGB video formats up to 165 MHz are supported over multi-mode or single-mode fiber. Resolutions which fit into the 165 MHZ bandwidth will be flawlessly transported from end to end. The Velocity RGB-9 harnesses advanced fiber optic technology which means that image quality is not compromised with problems such as frame dropping or content loss. The VelocityRGB-12 product allows for component video.

Each system consists of a transmitter and a receiver connected by multi-mode or single mode fiber optic cable. The transmitter unit connects to an analog video source with a suitable cable and the receiver unit provides connections to the display device. A +5V DC power supply is required on both the transmitter and receiver.

The Velocity RGB-9 and Velocity RGB-12 require two fibers. The Velocity RGB-9 transmitter supports RGB video formats up to 165MHz. In addition, the Velocity RGB-9 has a local RGB video display port on the transmitter and is compatible with all Thinklogical Velocity fiber video receivers, whether RGB or DVI. The receiver converts the video signal back from optical to RGB formats. The Velocity RGB-9 receiver with dual RGB outputs is offered for distributing the video source to two displays, eliminating the need for an external distribution amp.



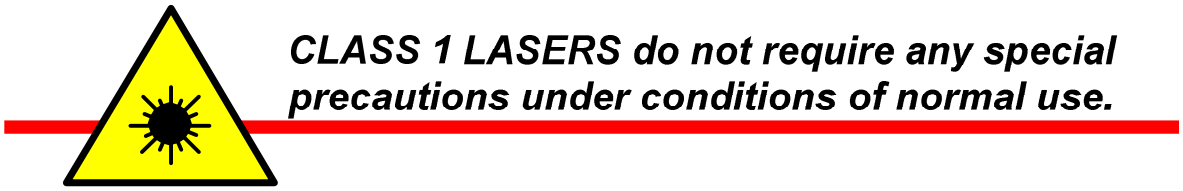
1.2 Contents

When you receive your Thinklogical™ VelocityRGB Video Extender, you should find the following items:

- RGB Video Extender Transmitter
- RGB Video Extender Receiver
- HD15M to HD15M cable, 2M (CBL000020-002MR)
- Universal AC Power adapters (PWR-000022-R)
- CD Product Manual

1.3 Laser Information

The VelocityRGB Video Extender is designed and identified as **Class 1 LASER products.**



1.4 Theory of Operation

MRTS Technology

Thinklogical® VelocityRGB Extenders utilize breakthrough, patent-pending technology for transmission and reception of DVI, keyboard, mouse, and high-speed data peripherals. This technology, known as **M**ulti **R**ate **T**ransmission **S**ystem (MRTS), provides end-to-end data transmission with unparalleled performance. This new, unique optic platform enables multiple data streams to be transmitted long distances over single or multiple fibers with complete reconstruction of the data clock at the destination end point. The result is perfect synchronization with each transmitted stream.

All new products are designated with our "Powered by **MRTS Technology**" ***logo.***

MRTS is a highly reliable technology and delivers powerful benefits to our customers when combined with our new SFP+ optics. The new MRTS Technology has the ability to transport every frame of a 1920 x 1200 @ 60Hz (or higher) video stream with no compression, along with all desktop peripherals (keyboard, mouse, etc., including 480Mbps USB 2.0) with no perceptible latency. Moreover, these signals can be transmitted distances from just a few meters up to 40 kilometers over single-mode or multi-mode fibers.

MRTS allows for traditional AV implementations and video routing to be incorporated into the same switch fabric, providing greater value, flexibility, performance and security. Additional unique capabilities include the ability to support 6.25Gbps bandwidth per stream, between 50% and 100% higher than our nearest competitors (typically 1.485Gbps to 3.2Gbps). This is significant because a single DVI stream requires a 5.4Gbps data rate to accommodate the 165MHz of video data. Our competitor's lower bandwidth capability is generally manifested in either dropped frames or lower resolution associated with compressing schemes. Not so with MRTS Technology.

2 System Features

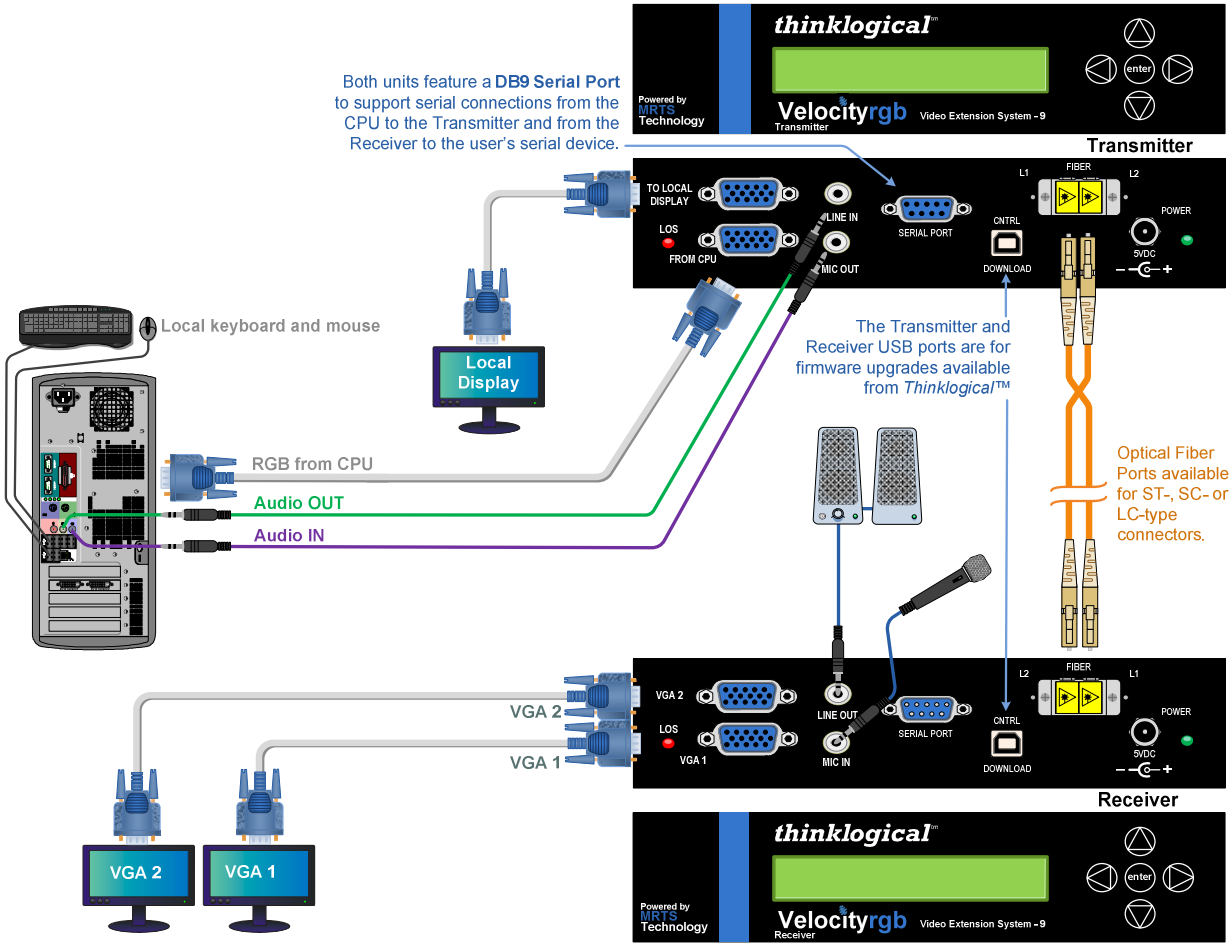
2.1 General System Features

The RGB Video Extender is designed for high resolution video extension applications. Each RGB Video Extender system includes the following common features:

- All copper cabling is industry standard
- Units are stand alone and rack mountable (brackets included)
- Local RGB Display port on transmitter
- RGB supported to 1600 x 1200, 1920x1080
- Front LCD with user adjustable settings
- Flawless image quality, with no frame dropping
- Small package
- Standard VGA (HD15) Copper Connectors
- Supports Component Video (Velocity 12)- 1920x1080i, 480P, 720P
- Velocity 12 TX Converts YPbPr component video into 4:4:4 RGB colorspace
- Multi Mode Fiber extends video up to 1000m (type OM4 fiber)
- Single Mode Fiber extends video up to 10km

2.2 Basic Operation

The Velocity-9 Transmitter connects to the Receiver using fiber optic cables. The source computer connects to the Transmitter and the viewing and audio devices to the Receiver, as shown below. See the Quick Start Guide on page 29 for more details.


Both units feature a DB9 Serial Port to support serial connections from the CPU to the Transmitter and from the Receiver to the user's serial device.
thinklogical
Powered by MRTS Technology
Velocityrgb Transmitter
Video Extension System - 9
enter
Transmitter
TO LOCAL DISPLAY
LOS
FROM CPU
LINE IN
MIC OUT
SERIAL PORT
CNTRL
DOWNLOAD
L1
FIBER
L2
POWER
5VDC
Local keyboard and mouse
Local Display
RGB from CPU
Audio OUT
Audio IN
The Transmitter and Receiver USB ports are for firmware upgrades available from Thinklogical™
Optical Fiber Ports available for ST-, SC- or LC-type connectors.
VGA 2
VGA 1
LINE OUT
MIC IN
Receiver
Velocityrgb Receiver

2.3 Technical Specifications

Storage Temperature	-20 to 70 °C (-4 to 158 ° F), 10 to 90% RH, non-condensing
Power Consumption	Transmitter: <15 Watts, typical Receiver: <15 Watts, typical
Front Panel Display	Transmitter and Receiver: 2 x 24 Liquid Crystal Display
Copper Cables (Supplied with system)	**Velocity 9 TX** Qty 1 CBL000020-002MR HD15 (M) to HD15 (M) Cable, 2M **Velocity 10 TX** Qty 1 CBL000013-002MR DVI(M) to DVI(M) Cable, 2M **Velocity 12 TX** Qty 1 CBL000020-002MR HD15 (M) to HD15 (M) Cable, 2M Qty 2 CBL000041 6FT VGA/HD15 to 3-RCA COMPONENT
Optical Cable	Single Mode or Multi Mode, depending upon model
Optical Distance	Up to 65 meters with Type OM1 Up to 350 meters with Type OM2 Up to 650 meters with Type OM3 Up to 1000 meters with Type OM4
Dimensions	***Velocity 9*** Height: 1.19” (3.016cm) Depth: 10” (25.4cm) Width: 6.49” (16.5cm) Weight: <1lb (0.45kg) Each Shipping Weight: 4lbs (1.81kg) Pair ***Velocity 10*** Height: 1.19” (3.016cm) Depth: 10” (25.4cm) Width: 6.49” (16.5cm) Weight: <1lb (0.45kg) Each Shipping Weight: 4lbs (1.81kg) Pair ***Velocity 12*** Height: 1.19 inches (3.016 cm) Depth: 10 inches (25.4 cm) Width: 6.49 inches (16.5 cm) Weight: <1 lb (0.45 kg) each Shipping Weight: 4 lbs (1.81 kg) (one Velocityrgb System-12 transmitter and one Velocity receiver) (Tolerance: ± .039"; .1000 mm)
Operating Temp and Humidity	0°to 50℃ (32°to 122 ℉), 5% to 95% RH, non-conde nsing
Supply Voltage	AC/DC Adapter Universal Input 90-264 VAC
Compliance	Approvals for US, Canada, and European Union *(pending)*
Warranty	12 months from date of shipment. Extended warranties available.

Connecting to the Thinklogical RGB Extender

All physical connections to the product use industry-standard connectors. Non-supplied cables that may be needed are commercially available. All connections are found on the rear of the unit.

3.1 Pluggable SFP+

The SFP+ Optical Module is an 8Gbs Short-Wavelength Transceiver designed for use in bi-directional Fiber Optic Channel links. The modules are hot-pluggable and operate with 3.3VDC.

Always use dust caps to protect against damage when a fiber optic connector is not attached to its coupling device (fiber optic equipment, bulkheads, etc.)

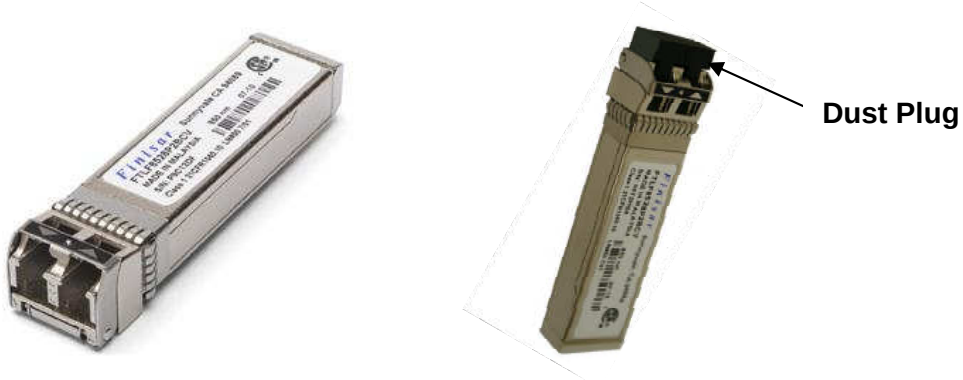


Figure 11: SFP+ Module; it is good practice to install dust plugs in unused SFP+s

Each SFP+ module is locked into its enclosure with a built-in latch handle that can be opened for removal or locked for installation.

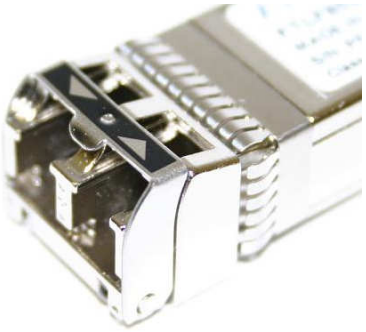


Figure 12a: SFP+ latch closed

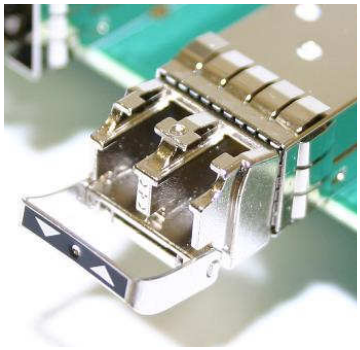


Figure 12b: SFP+ latch open

The latch handle spans the two LC ports and arrows printed on the handle indicate which port is an INPUT ( ) and which is an OUTPUT ( ).

3.2 Fiber Optic Cable

Requirements

Thinklogical recommends SX+ Laser Enhanced (50µm) fiber for your Velocity Extension System. Multi-mode fiber has the ability to extend up to a maximum of 1000m, where Single-mode fiber has the ability to extend distances beyond 1000m.

Fiber optic cable must run between the location of the Transmitter unit (near your CPU) and the Receiver unit (near your desktop devices). The standard multi-mode fiber optic cable must be 50 micron, terminated with an SC, ST or LC type fiber optic connector and no longer than 3280 running feet (1000 meters). Be careful not to kink or pinch the fiber optic cable as it is being installed, and keep all bend radii to no less than 3 inches (76.2mm). **Please refer to the Quick Start Guide included in *Appendix B*.**

Handling Fiber Optic Cable

Unlike copper cabling, fiber optic cable requires special handling. A small speck of dust or a scratch to the ferrule tip (the end of the connector) can attenuate the optical signal so that it becomes unusable.

Warning! The ends of the connectors (the ferrule) should never come in contact with any foreign object, including fingertips.

Warning! Minimum bend radius must be 1.5". Be careful not to pinch the fiber when using ties.

3.3 RGB Video Extender Transmitter

If a DVI-A connection from the source is required, standard adapters are available from Thinklogical and third party suppliers to make other combinations. (See Table 3)

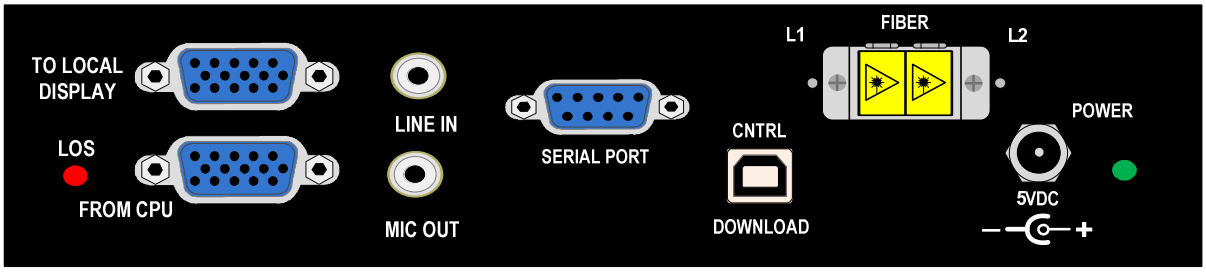


FIGURE 7: Velocity RGB-9 Transmitter

The CPU and the TX Connector

Video connections to the CPU are made between the video output card of the CPU and the TX VGA connector labeled "FROM CPU" (closest to fiber connectors). The additional video connector is for a

local administrator to view the video output at the TX unit.

The analog VGA inputs are converted to a fiber optic suitable form and transmitted to the RX unit.

Modifying the Analog RGB Video Parameters

It is possible for one resolution to have different video timings, which could cause a less than perfect display on the remote side. For example, take 1280x1024x60 Hz. The VESA standard has 1688 pixels in one line, whereas a SGI format has 1680 pixels. The transmitter lookup table is configured for the VESA standard, but can be easily modified to support the SGI format. (Refer to Section 7.2.6 for step by step instructions.)

FIGURE 14

FIGURE 15

FIGURE 14: *1280x1024x60 on an SGI computer with the PLLDIV set at 1688 (default value). Notice the columns.*

FIGURE 15: *1280x1024x60 on an SGI computer with the PLLDIV modified to 1680.*

The below table lists supported analog (VGA) resolutions:

Thinklogical™ Velocity supported resolutions

Active Resolution		Total Lines	Vertical Freq(Hz)	Horizontal Freq(kHz)	Pixel Clock Freq(MHz)	Video Standard
Pixels	Lines					
640	448	472	66	31.2	25	Honeywell
640	480	525	60	31.5	25.175	Industry Standard
640	480	520	72	37.9	31.5	VESA
640	480	500	75	37.5	31.5	VESA
640	480	509	85	43.3	36	VESA

720	400	449	70	31.5	28.32	Industry Standard
800	600	625	56	35.1	36	VESA
800	600	628	60	37.9	40	VESA
800	600	666	72	48.1	50	VESA
800	600	625	75	46.9	49.5	VESA
800	600	631	85	53.7	56.25	VESA
1024	768	800	50	40	53.44	Folsom
1024	768	806	60	48.4	65	VESA
1024	768	800	75	60	78.75	VESA
1024	768	808	85	68.7	94.5	VESA
1280	720	750	50	37.5	74.25	Folsom
1280	720	750	60	45	74.25	CEA-861-E
1280	800	828	60	49.7	83.46	VESA GTF
1280	1024	1066	50	52.8	89.55	Folsom
1280	1024	1066	60	64	108	VESA
1280	1024	1082	60	64.8	108.88	Discreet
1280	1024	1066	75	80	135	VESA
1280	1024	1072	85	91.1	157.5	VESA
1280	1024	1063	96	102	163.277	SGI Onyx2
1366	768	795	60	47.7	85.5	VESA GTF
1400	1050	1090	50	54.5	94.61	Folsom
1400	1050	1080	60	64.8	120.78	VESA CVT-RB
1400	1050	1089	60	65.3	121.75	VESA
1400	1050	1099	96	105.4	164.5	SGI Stereo
1440	900	932	60	55.8	106.4	VESA GTF
1440	900	934	60	55.9	106.5	VESA DMT
1600	1200	1250	60	75	162	VESA
1680	1050	1089	60	65.3	146.25	VESA DMT
1920	1080	1125	25	28.12	74.25	Folsom
1920	1080	1125	50	56.25	148.5	Folsom
1920	1080	1125	60	67.5	148.5	CEA-861-E

Supported Analog VGA Resolutions

***In the Velocity 12 product 480p, 720p and 1080i resolutions are supported at 60Hz.**

3.3 RGB Video Extender Receiver

The receiver connects to your display/monitor video Input using a VGA, HD15 (if monitor has a VGA/HD15 connector). These cables are provided with unit. Standard adapters are available from Thinklogical and third party suppliers if necessary to make other connections.

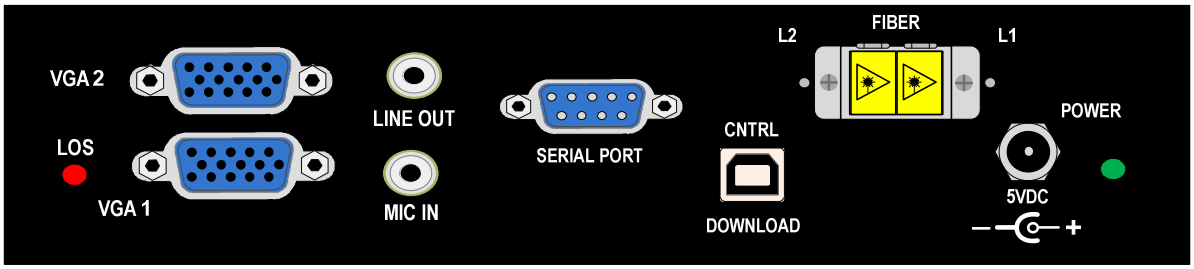


FIGURE 22: Velocity RGB-9 Receiver

3.4 AC Power

AC Power Supply

Two power supply adapters (part number PWR-000022-R) are included.

- ✓ Universal Input: 100 – 240 VAC 50/60Hz Nominal
- ✓ Continuous Short Circuit Protection
- ✓ Over Voltage Protection
- ✓ Optional AC adaptors to fit various international standards

AC Power Supply (PN: PWR-000022-R) shown with international AC adaptors

4 Set-Up and Installation

4.1 Order of Installation Events

Please refer to the **Quick Start Guide** included with your products for detailed instructions. The Quick Start Guide is also available in **Appendix A**.

4.2 Firmware Upgrades

Firmware upgrades are available from Thinklogical. Please call us for technical assistance at (203) 647-8700.

4.2 Front Panel Usage

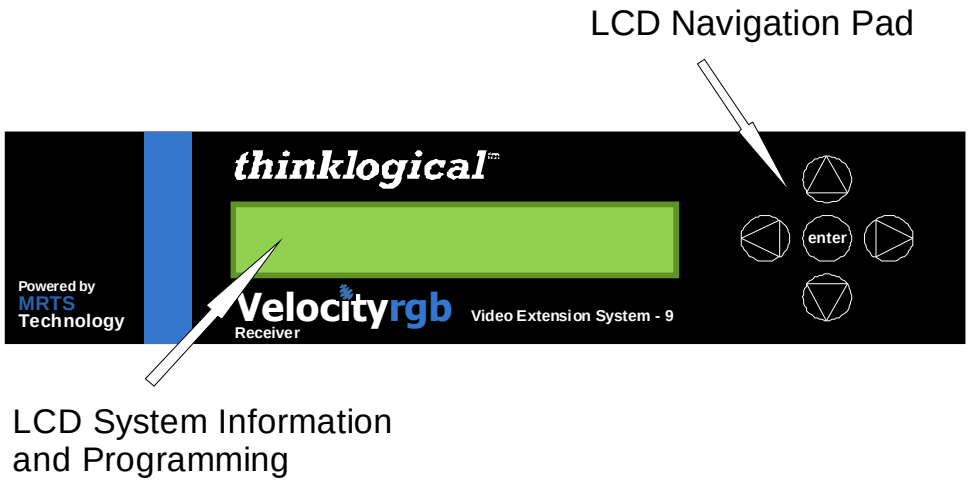


FIGURE 28: VelocityRGB *Video Extension System – 9, LCD DISPLAY*

4.2.1 General Front Panel Usage

Once the unit is powered up, the initial display is shown as follows:

This displays the device type and revision of the base unit.

By pressing the arrow (down) keys, the RGB Video Extender allows you to enter into the main menu. **All main root menu items are displayed with an *.** They are as follows:

Once an * root menu item is displayed, you can then use the (left) or (right) arrow keys to review settings or make changes, if allowed. The RGB Video Extender menu functionality is as follows:

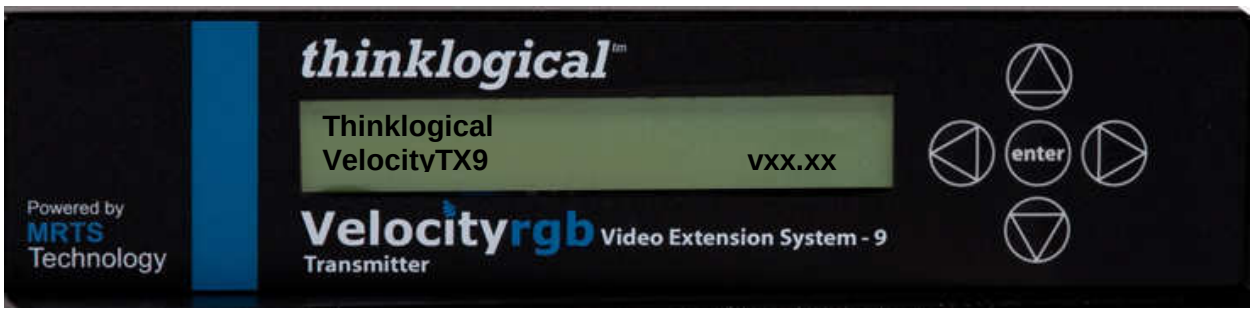
Some menu options may not be available on some models

Display	Modifiable	Description
***System**		
LS Connected	NO	An indication of the fiber status from the TX to RX.
TX Ctrl Name	TX Only	Name entered on TX unit is displayed on RX unit.
Load Defaults	YES	Loads factory default video configurations.
Store Values	YES	Store video configurations.
TX Control	NO	Revision of the TX control firmware.
RX Control	NO	Revision of the RX control firmware.
FPGA Version	NO	Revision of the FPGA code
Serial Number	YES	Serial Number of unit.
Aud Reset En	YES	Resets the audio sync circuitry
SFP Loss of Signal channel. Value =	NO	An indication of fiber status on the extender Receive 0 if signal is received, 1 if signal is missing.
Debug Values	YES	Factory Use Only.
***DDC – To be implemented at a later date**		
DDC PROM Emula. Mode	YES	**Options are Dynamic, Static and Passthru.** In **Dynamic** mode, the DDC of the monitor connected to the RX is read and stored on the TX. The CPU is informed of a change in DDC and the monitor is read. This is useful when the CPU can be turned on without a connection to the RX. **Static** mode is used to maintain the current DDC regardless of monitor changes at the RX. **Pass-thru** acts as a wire between the TX and RX and no emulation takes place.
Load Default DDC mode to	YES	Loads the default EDID table into the TX and changes the Static.
Acquire DDC stores it	YES	Gets the EDID table from the monitor attached to the RX and in the TX.
Force DDC mode digital.	YES	Sets the EDID Video Input Signal Type to either analog or
*** Video**		
VGA Connected	No	An indication of whether VGA video is input to the Vis TX
Resolution input	No	Active pixels x active lines vertical rate
Hor. Freq	No	Horizontal frequency
Auto Phase	Yes	Automatically adjust the Sampling Phase to the best setting
PLL Total	Yes	The total pixel count in one line. Consists of Horizontal active pixels + Horizontal blanking pixels
HSOUT Width	Yes	Horizontal sync (Hsync) of video, measured in pixels
DE Start	Yes	Horizontal back porch (Hpb) of video, measured in pixels
DE Width	Yes	Total active pixels in one line
Line Start measured	Yes	Vertical back porch (Vbp) + Vertical sync (Vsync) of video, in lines

Line Width	Yes		The number of visible lines
NativeH	No		For use by Tech support to determine horizontal frequency input. Use the following formula to calculate the frequency: **NativeH * 16**
NativeV		No	For use by Tech support to determine vertical frequency input. Use the following formula to calculate the frequency: **(10,000,000/NativeV)/16**
ISL Sync Status	NO		For use by Thinklogical support. Measures sync selection and sync polarity
ISL Sync Activity		NO	For use by Thinklogical support. Measures sync activity
Video 1 cnt	No		Internal use only.
Video 2 cnt	No		Internal use only.
Enable Component Video		Yes	Enables component video resolutions

4.2.2 Saving Changes

Save video configurations so that after powering up, the device can recall customer video settings.



Using the down arrow, scroll down to ***System** as shown below.

Using the right arrow, scroll right until **Store Values** is displayed as shown below then press **enter**.

Using the up arrow or down arrow scroll until **Yes** appears as shown below. Then press **enter**.

Using the right arrow or left arrow, scroll until you return to the ***System** menu option. Using up arrow or down arrow, scroll until you get back to the **Thinklogical** screen.

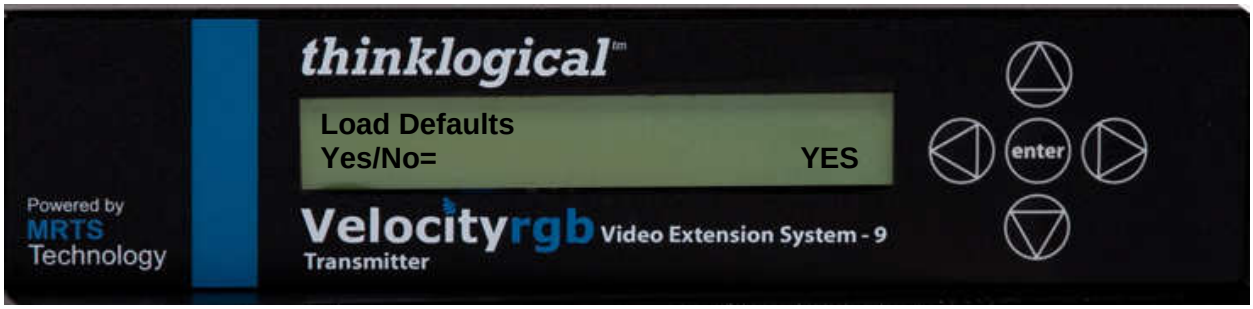
4.2.3 Restoring Factory Defaults

Load factory default video configurations.

Using the down arrow, scroll down to ***System** as shown below.

Using the right arrow button, scroll right until **Load Defaults** is displayed as shown below. Then press **enter**.

Using the up arrow or down arrow scroll until **Yes** appears as shown below. Then press **enter**.



Follow the steps in ***Section 4.3.2 Saving Changes*** to save your changes.

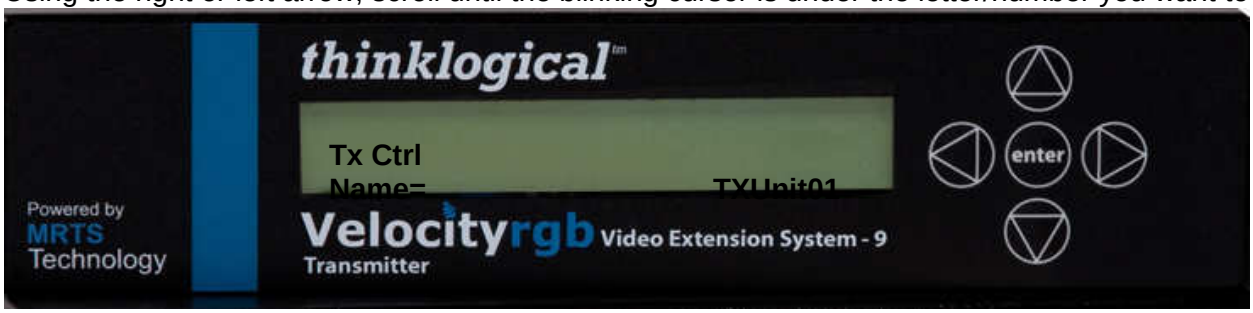
4.2.4 Naming the Transmitter Unit

Modify the name of the unit through the Transmitter. The name entered on the Transmitter will display on the Receiver unit.

Using the arrow down button, scroll down to ***System** as shown below.

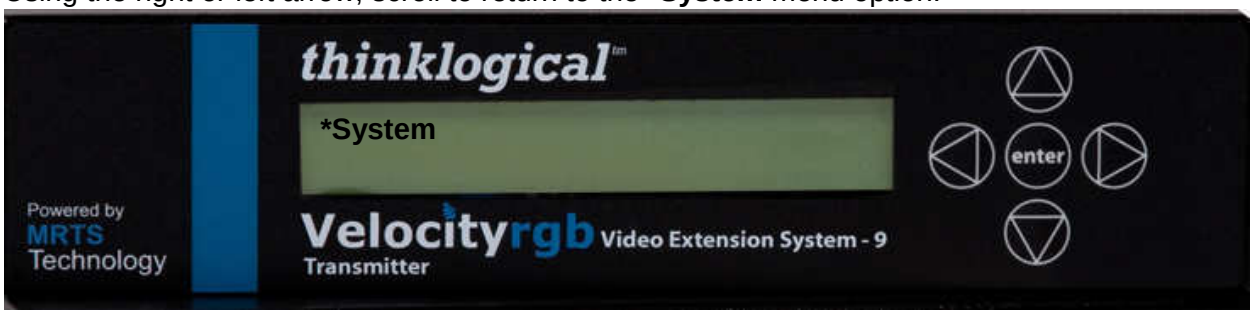
Using the right arrow, scroll right until **Tx Ctrl** is displayed as shown below. Then press **enter**.

Using the right or left arrow, scroll until the blinking cursor is under the letter/number you want to change.



Using the up or down arrow, scroll (holding down the up or down arrow will scroll faster) until you find the appropriate letter/number. Then press **enter.**

Using the right or left arrow, scroll to return to the ***System** menu option.



Follow the steps in ***Section 2.7.2 Saving Changes*** to save your changes. The steps are listed below:

1. Using the down arrow, scroll down to ***System** as shown below.
2. Using the right arrow, scroll right until **Store Values** is displayed as shown below. Then press **enter**.
3. Using the up or down arrow scroll until **Yes** appears as shown below. Then press **enter**.
4. Using the right or left arrow, scroll to return to the ***System** menu option.
5. Using up or down arrow scroll until you get to the **Thinklogical** screen.

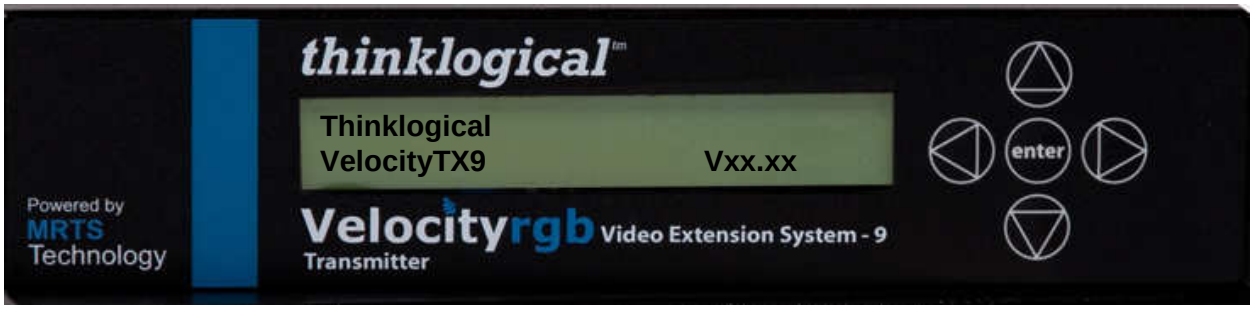
4.2.5 Modifying an Existing Video Modeline

Modification to support the alternate timing.

Example of modifying an existing video modeline:

The VESA timing for 1280x1024_60Hz (SXGA) is loaded into the VelocityRGB 9 TX. The modeline can be easily modified to support the alternate timing listed in the table below. Modifiable differences are highlighted.

Parameter	Supported Timing	Alternate Timing
Resolution	1280x1024_60	1280x1024_60 SGI Onyx
Pixel Clock (MHz)	108	107.352
Horizontal Frequency (kHz)	63.98	63.9
Vertical Refresh (Hz)	60	60
Horizontal Total Pixels	1688	1680
Horizontal Active (Pixels)	1280	1280
Horizontal Front Porch(Pixels)	48	40
Horizontal Sync Width(Pixels)	112	120
Horizontal Back Porch(Pixels)	248	240
Vertical Total Lines (Lines)	1066	1065
Vertical active lines (Lines)	1024	1024
Vertical Front Porch (Lines)	1	3
Vertical sync (Lines)	3	3
Vertical Back Porch (Lines)	38	35



The resolution you wish to modify must be applied to the TX video input connector. Using the arrow down, scroll down to ***Video** as shown below.

Using the right arrow, scroll right until **VGA Connected** is displayed as shown below. Then press **enter**.

The Horizontal Pixel needs to be changed to 1680 to reflect the Alternate Timing listed on **Table 4**. Move the cursor under the number you want to change by pressing the right or left arrow. Use the arrow up or down to increment or decrement the number. Once number is entered correctly, press **enter**.

Using the right arrow, scroll right until **DE Start** is displayed as shown below. Then press **enter**.

The Horizontal Backporch (Pixels) needs to be changed to 240 to reflect the Alternate Timing listed on **Table 4**. Move the cursor under the number you want to change by pressing the right or left arrow. Use the arrow up or down to increment or decrement the number. Once number is entered correctly, press **enter**.

Using the right arrow, scroll right until **Line Start** is displayed as shown below. Then press **enter**.

The Vertical Backporch (Pixels) needs to be changed to 35 to reflect the Alternate Timing listed on **Table 4**. Move the cursor under the number you want to change by pressing the right or left arrow. Use the arrow up or down to increment or decrement the number. Once number is entered correctly, press **enter**.

Using the right or left arrow, scroll to return to ***Video** menu option.

Follow the steps in ***Section 2.7.2 Saving Changes*** to save your changes. The steps are listed below:

1. Using the down arrow, scroll down to ***System** as shown below.
2. Using the right arrow, scroll right until **Store Values** is displayed as shown below.
3. Then press **enter**.
4. Using the up or down arrow scroll until **Yes** appears as shown below.
5. Then press **enter**.
6. Using the right or left arrow, scroll to return to the ***System** menu option.
7. Using up or down arrow scroll until you get to the **Thinklogical** screen.

5 Regulatory & Safety Compliance

5.1 Safety Requirements

Symbols found on the product

Markings and labels on the product follow industry-standard conventions. Regulatory markings found on the products comply with domestic and many international requirements.

Regulatory Compliance

Thinklogical®'s Velocity Extension System is designed and made in the U.S.A. The Velocity Extension system has been tested by a certified testing laboratory and found to be compliant with the following standards (both domestic USA and many international locations):

North America

Safety

ANSI/UL60950-1: 1st Edition (2003)

CAN/CSA C22.2 No. 60950-1-03

LASER Safety

CDRH 21CFR 1040.10

Class 1 LASER Product

Electromagnetic Interference

FCC CFR47, Part 15, Class A

Industry Canada ICES-003 Issue 2, Revision 1

Australia & New Zealand

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

European Union

Declaration of Conformity

Manufacturer's Name & Address: **Thinklogical®**
100 Washington Street
Milford, Connecticut 06460 USA
Telephone 1-203-647-8700

These products comply with the requirements of the Low Voltage Directive 72/23/EEC and the EMC Directive 89/336/EEC.

5.2 Standards with Which Our Products Comply

Safety

CENELEC EN 60950-1, 1st Edition (2001)

LASER Safety

IEC60825:2001 Parts 1 and 2

Class 1 LASER Product

Electromagnetic Emissions

EN55022: 1994 (IEC/CSPIR22: 1993)

EN61000-3-2/A14: 2000

EN61000-3-3: 1994

Electromagnetic Immunity

EN55024: 1998 Information Technology Equipment-Immunity Characteristics

EN61000-4-2: 1995 Electro-Static Discharge Test

EN61000-4-3: 1996 Radiated Immunity Field Test

EN61000-4-4: 1995 Electrical Fast Transient Test

EN61000-4-5: 1995 Power Supply Surge Test

EN61000-4-6: 1996 Conducted Immunity Test

EN61000-4-8: 1993 Magnetic Field Test

EN61000-4-11: 1994 Voltage Dips & Interrupts Test

5.3 Supplementary Information

The following statements may be appropriate for certain geographical regions and might not apply to your location.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigencies du Règlement sur le matérial brouilleur du Canada.

Warning! This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take corrective measures.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications in which case the user may be required to take adequate corrective measures at their own expense.

Note: This Class A digital apparatus complies with Canadian ICES-003 and has been verified as being compliant within the Class A limits of the FCC Radio Frequency Device Rules (FCC Title 47, Part 15, Subpart B CLASS A), measured to CISPR 22: 1993 limits and methods of measurement of Radio Disturbance Characteristics of Information Technology Equipment.

Note: The user may notice degraded audio performance in the presence of electromagnetic fields.

Note: If using a keyboard that is noise susceptible, a ferrite ring on the keyboard cable may be needed to comply with Immunity Requirements

Product Serial Number

Thinklogical® products have a unique serial number, imprinted on an adhesive label that is fixed to the bottom of the chassis. The serial number includes a date-code. The format for the date-code is 2 digits for the month, 2 digits for the day and 2 digits for the year, plus two or three digits for a unique unit number. This serial number is also found on the original shipping carton.

Connection to the Product

Connections and installation hardware for our products use industry-standard devices and methods. All wiring connections to the customer equipment are designed to minimize proprietary or customized connectors and cabling. Power connections are made with regionally appropriate power cords and approved methods.

6 How to Contact Us

6.1 Customer Support

Thank you for choosing a Thinklogical® product for your application. We appreciate your business and are dedicated to helping you successfully use our product. Thinklogical® is here to help you.

Thinklogical® is an engineering company and you will receive the information you require directly from our most knowledgeable engineers. We believe that the first line of support is the design engineer that developed the product. Therefore, your questions will be handled promptly by our in-house engineers who are most familiar with your products.

To contact Thinklogical®, use the following telephone numbers and internet-based methods.

Website

Check out our website for current product offerings, support information and general information about all of the products we offer.

Our internet website offers product information on all current systems, including technical specification sheets and installation guides (for viewing online or for download), product diagrams showing physical connections and other information you might need.

Internet: **www.thinklogical.com**

Note: Most online documents are stored as Adobe Acrobat "PDF" files. If you do not have the Adobe Acrobat reader needed to view PDF files, visit www.adobe.com for a download.

Email

Thinklogical® is staffed **Monday through Friday from 8:30am to 5:00pm**, Eastern Time Zone. We will try to respond to your email inquiries promptly, use the following email addresses for your different needs:

info@thinklogical.com – Information on Thinklogical® and our products.

sales@thinklogical.com – Sales Department - orders, questions or issues.

support@thinklogical.com – Product support, technical issues or questions, product repairs and request for Return Authorization.

Telephone

Telephone Sales: Contact our expert sales staff via telephone in Milford, CT at **1-203-647-8700** or if in the continental US, you may use our **toll-free number 1-800-291-3211**. We are here Monday through Friday from 8:30am to 5:00pm, Eastern Time Zone. Ask for your representative's direct dial phone number when you call.

Telephone Product Support: Contact Product Support via telephone in Milford, CT at **1-203-647-8700**. The support lines are manned Monday through Friday, 8:30am to 5:00pm, Eastern Time Zone.

International Sales: Please contact our US sales staff in Milford, CT at **1-203-647-8700**. We are here Monday through Friday, 8:30am to 5:00pm, Eastern Time Zone (same as New York City). If leaving a voice message please provide a "best time to call back" so we may reach you at your convenience.

Our switchboard attendant will direct your call during regular business hours. We have an automated attendant answering our main telephone switchboard after regular business hours and holidays. You can leave voice messages for individuals at any time. Our Sales Representatives have direct numbers to speed up your next call to us.

Fax

Our company facsimile number is **1-203-783-9949**. Please indicate the nature of the fax on your cover sheet and provide return contact information.

6.2 Product Support

Thinklogical's® support personnel are available **Monday through Friday from 8:30am to 5:00pm**, Eastern Time Zone. If your application requires assistance at some time outside of our normal business hours, please contact us beforehand and we will do our best to make arrangements to help you with your Thinklogical® products.

Warranty

Thinklogical® warrants this product against defects in materials and workmanship for a period of one year from the date of delivery. Thinklogical® and its suppliers disclaim any and all other warranties.

Note: Thinklogical® Inc. products carry a one year warranty, with longer term available at time of purchase on most products. Please refer to your product invoice for your products Warranty Terms & Conditions.

Defect remedy shall be the repair or replacement of the product, provided that the defective product is returned to the authorized dealer within a year from the date of delivery.

If you wish to return your device, contact the Thinklogical® authorized dealer where you purchased the device, or if you purchased directly, call Thinklogical® at **1-800-291-3211** (USA).

Return Authorization

In the event you must return a product to Thinklogical® directly, please contact **Customer Support** at **1-800-291-3211** or **1-203-647-8700**. Customer Support will ask you to describe the problem and will issue you a **R**eturn **M**erchandise **A**uthorization number (RMA#). Pack the device in its original box, if possible, and return it with the RMA# printed on the outside of the box.

Note: DO NOT return a product to Thinklogical® without a *Return Material Authorization*.

Return address for products with Return Material Authorization:

Thinklogical®, LLC
Attn: RMA#
100 Washington Street
Milford, CT 06460 USA

PH: 1-800-291-3211 (USA only)

Our Address

If you have any issue with a product, have product questions or need technical assistance with your Thinklogical® system, please call us at **1-800-291-3211 (USA only)** or **1-203-647-8700** and let us help. If you'd like to write us, our mailing address is:

Thinklogical® LLC.
100 Washington Street
Milford, CT 06460 USA

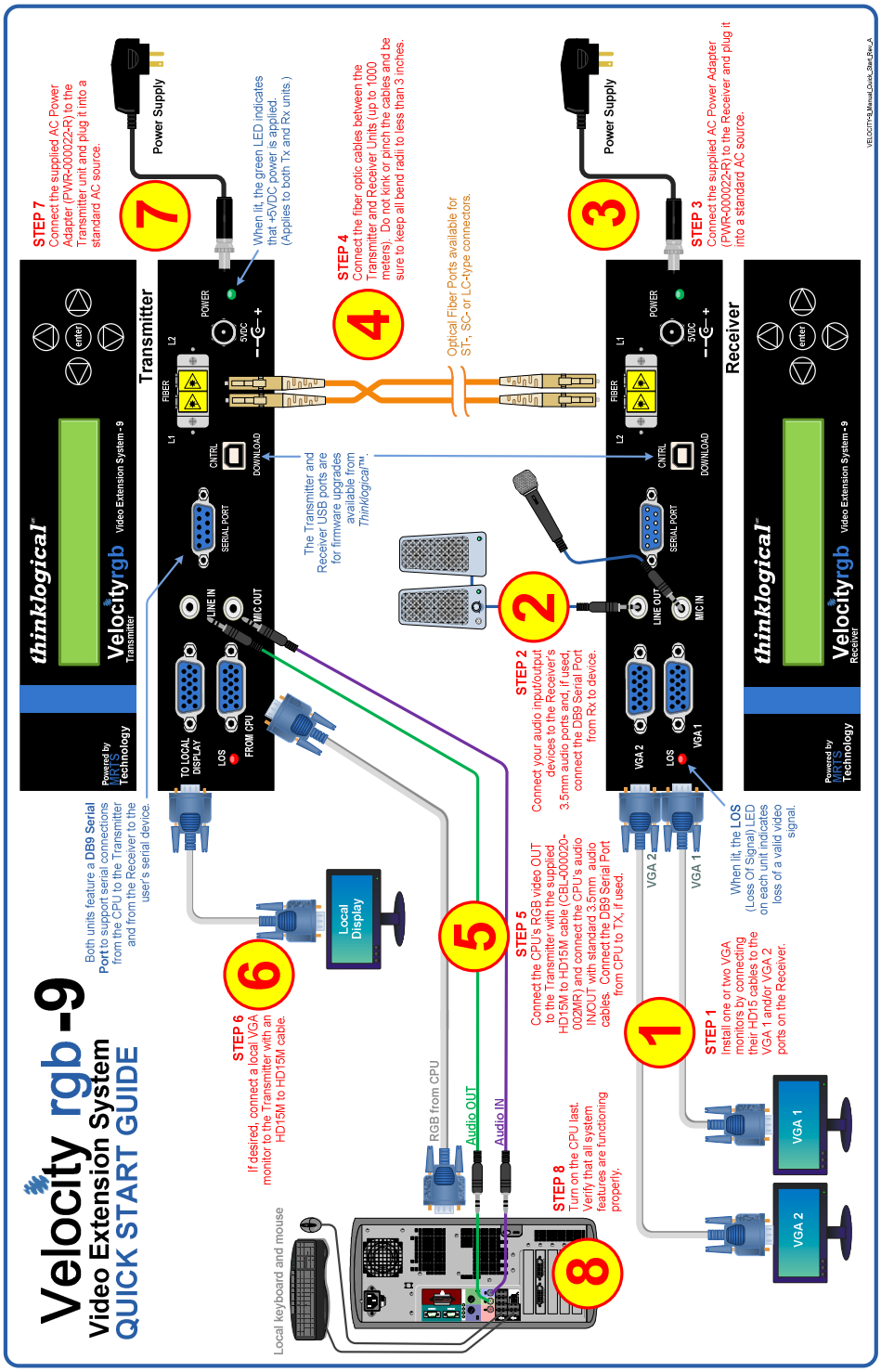
APPENDIX A: ORDERING INFORMATION

Thinklogical's VelocityRGB Extenders	
Part Number	**Description**
Velocity 9 Part Numbers	
VEL-AV0M09-LCRX	Velocity 9 RGB RX, RGB HV, AUX VGA Output, Serial, Audio, MM, LC
VEL-AV0M09-LCTX	Velocity 9 RGB TX, RGB HV, Local Display, Local VGA Port, Serial, Audio, MM, LC
VEL-AV0M09-LCRA	Velocity 9 RGB RX, RGB HV, AUX VGA Output, Serial, Separate Audio, MM, LC
VEL-AV0M09-LCTA	Velocity 9 RGB TX, RGB HV, Local Display, Local VGA Port, Serial, Separate Audio, MM, LC
VEL-AVRM09-LCRX	Velocity 9 RGB RX, RGB HV, AUX VGA Output, Serial, Audio, Redund Optics, MM, LC
VEL-AVRM09-LCTX	Velocity 9 RGB TX, RGB HV, Local Display, Local VGA Port, Serial, Audio, Redund Optics, MM, LC
VEL-AV0X09-LCRX	Velocity 9 RGB RX, RGB HV, AUX VGA Output, Serial, Audio, Multipath, MM, LC
VEL-AV0X09-LCTX	Velocity 9 RGB TX, RGB HV, Local Display, Local VGA Port, Serial, Audio, Multipath, MM, LC
Velocity 10 Part Numbers	
VEL-AV0M12-LCTX	Velocity 12 RGB TX, RGB HV, Local Display/VGA Port, Component, Serial, Audio, MM, LC
VEL-AV0M12-LCTA	Velocity 12 RGB TX, RGB HV, Local Display/VGA Port, Component, Serial, Separate Audio, MM, LC
VEL-AVRM12-LCTX	Velocity 12 RGB TX, RGB HV, Local Display/VGA Port, Component, Serial, Audio, Redund Optics, MM, LC
VEL-AV0X12-LCTX	Velocity 12 RGB TX, RGB HV, Local Display/VGA Port, Component, Serial, Audio, Multipath, MM, LC
Velocity 9/12 Optics, Multi-Mode	
VOP-M04	Velocity 9/12 Optics Option for TX/RX, MM, Dual Fiber, 1000M, LC
VOP-M01	Velocity 9/12 Optics Option for TX/RX, MM, Dual Fiber, 1000M, SC/ST
VOP-M26	Velocity 9/12 Redund Optics Option for TX/RX, MM, Four Fibers, 1000M, LC
VOP-M22	Velocity 9/12 Redund Optics Option for TX/RX, MM, Four Fibers, 1000M, SC/ST
VOP-S11	Velocity 9/12 Optics Option for TX/RX, SM, Dual Fiber, 10KM, LC
VOP-S05	Velocity 9/12 Optics Option for TX/RX, SM, Dual Fiber, 10KM, SC/ST
Velocity 9/12 Optics, Single-Mode	
VOP-S41	Velocity 9/12 Redund Optics Option for TX/RX, SM, Four Fibers, 10KM, LC
VOP-S15	Velocity 9/12 Redund Optics Option for TX/RX, SM, Four Fibers, 10KM, SC/ST
VOP-S41	Velocity 9/12 with Separate Audio Optics Option for TX/RX, SM, Four Fibers, 10KM, LC
VOP-S15	Velocity 9/12 with Separate Audio Optics Option for TX/RX, SM, Four Fibers, 10KM, SC/ST
VOP-S12	Velocity 9/12 Multipath Optics Option for TX/RX, SM, Three Fibers, 4KM, LC
VOP-S08	Velocity 9/12 Multipath Optics Option for TX/RX, SM, Three Fibers, 4KM, SC/ST
Velocity 10 Part Numbers	
VEL-AV0M10-LCRX	Velocity 10 RGB RX, RGB HV, DVI-I, AUX VGA Output, Serial, Audio, MM, LC
VEL-AV0M10-LCTX	Velocity 10 RGB TX, RGB HV, DVI-I, Local Display, Local VGA Port, Serial, Audio, MM, LC
VEL-AV0M10-LCRA	Velocity 10 RGB RX, RGB HV, DVI-I, AUX VGA Output, Serial, Separate Audio, MM, LC
VEL-AV0M10-LCTA	Velocity 10 RGB TX, RGB HV, DVI-I, Local Display, Local VGA Port, Serial, Separate Audio, MM, LC
VEL-AVRM10-LCRX	Velocity 10 RGB RX, RGB HV, DVI-I, AUX VGA Output, Serial, Audio, Redund Optics, MM, LC
VEL-AVRM10-LCTX	Velocity 10 RGB TX, RGB HV, DVI-I, Local Display, Local VGA Port, Serial, Audio, Redund Optics, MM, LC
VEL-AV0X10-LCRX	Velocity 10 RGB RX, RGB HV, DVI-I, AUX VGA Output, Serial, Audio, Multipath, MM, LC
VEL-AV0X10-LCTX	Velocity 10 RGB TX, RGB HV, DVI-I, Local Display, Local VGA Port, Serial, Audio, Multipath, MM, LC

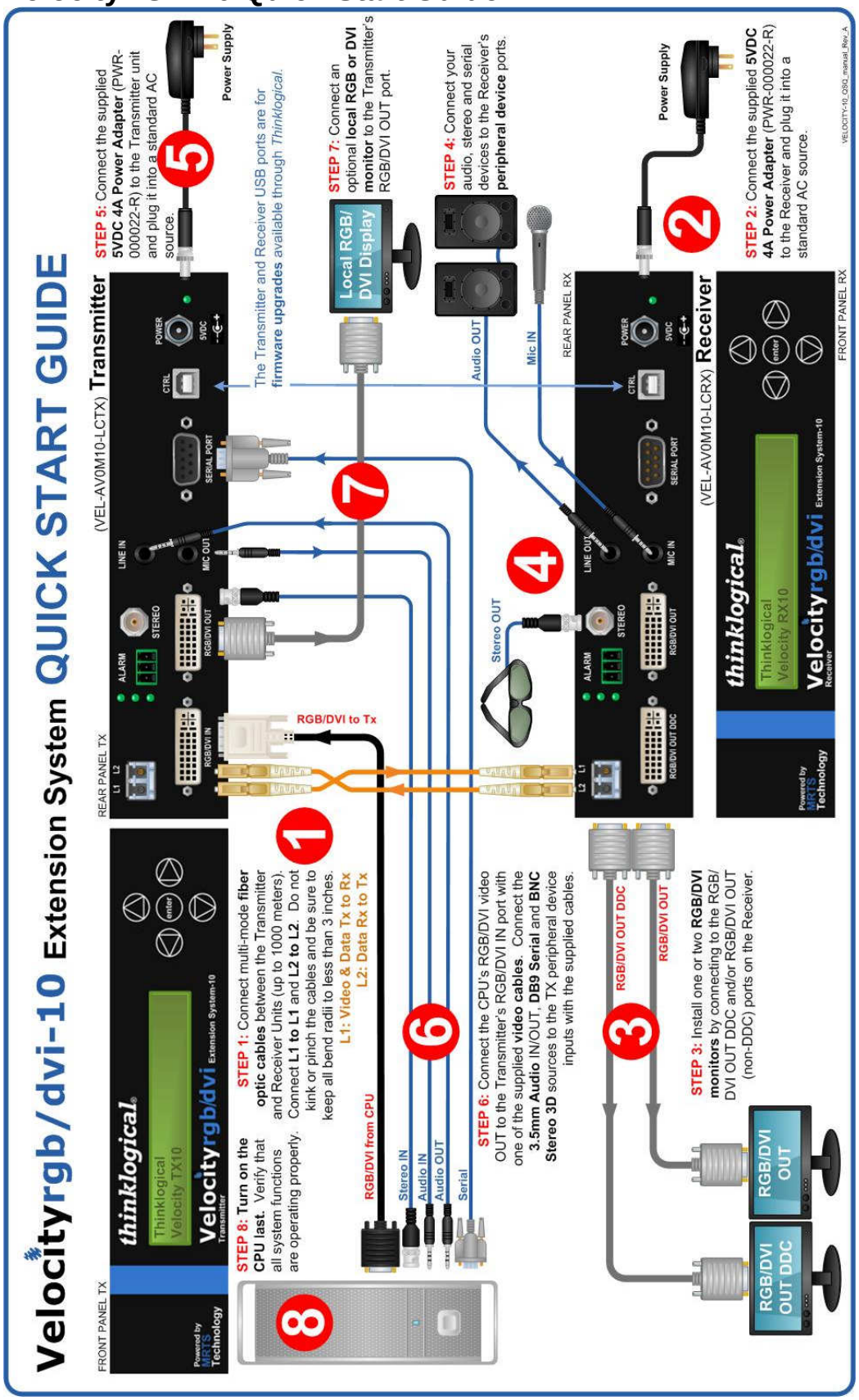
Velocity 10 Optics, Multi-Mode	
VOP-M19	Velocity 10 Optics Option for TX/RX, MM, Dual Fiber, LC, SC or ST, 1000M
VOP-M30	Velocity 10 Redund Optics Option for TX/RX, MM, Four Fibers, LC, SC or ST, 1000M
VOP-M14	Velocity 10 with Separate Audio Optics Option for TX/RX, MM, Four Fibers, LC, SC or ST, 1000M
VOP-M21	Velocity 10 Multipath Optics Option for TX/RX, MM, Three Fibers, LC, SC or ST, 1000M
Velocity 10 Optics, Single-Mode	
VOP-S04	Velocity 10 Optics Option for TX/RX, SM, Dual Fiber, LC, SC or ST, 10KM
VOP-S06	Velocity 10 Redund Optics Option for TX/RX, SM, Four Fibers, LC, SC or ST, 10KM
VOP-S89	Velocity 10 Redund Optics Option for TX/RX, SM, Four Fibers, LC, SC or ST, 40KM
VOP-S06	Velocity 10 with Separate Audio Optics Option for TX/RX, SM, Four Fibers, LC, SC or ST, 10KM
VOP-S06	Velocity 10 Multipath Optics Option for TX/RX, SM, Three Fibers, LC, SC or ST, 4KM
VOP-S58	Velocity 10 Multipath Optics Option for TX/RX, SM, Three Fibers, LC, SC or ST, 40KM

APPENDIX B: QUICK START GUIDE

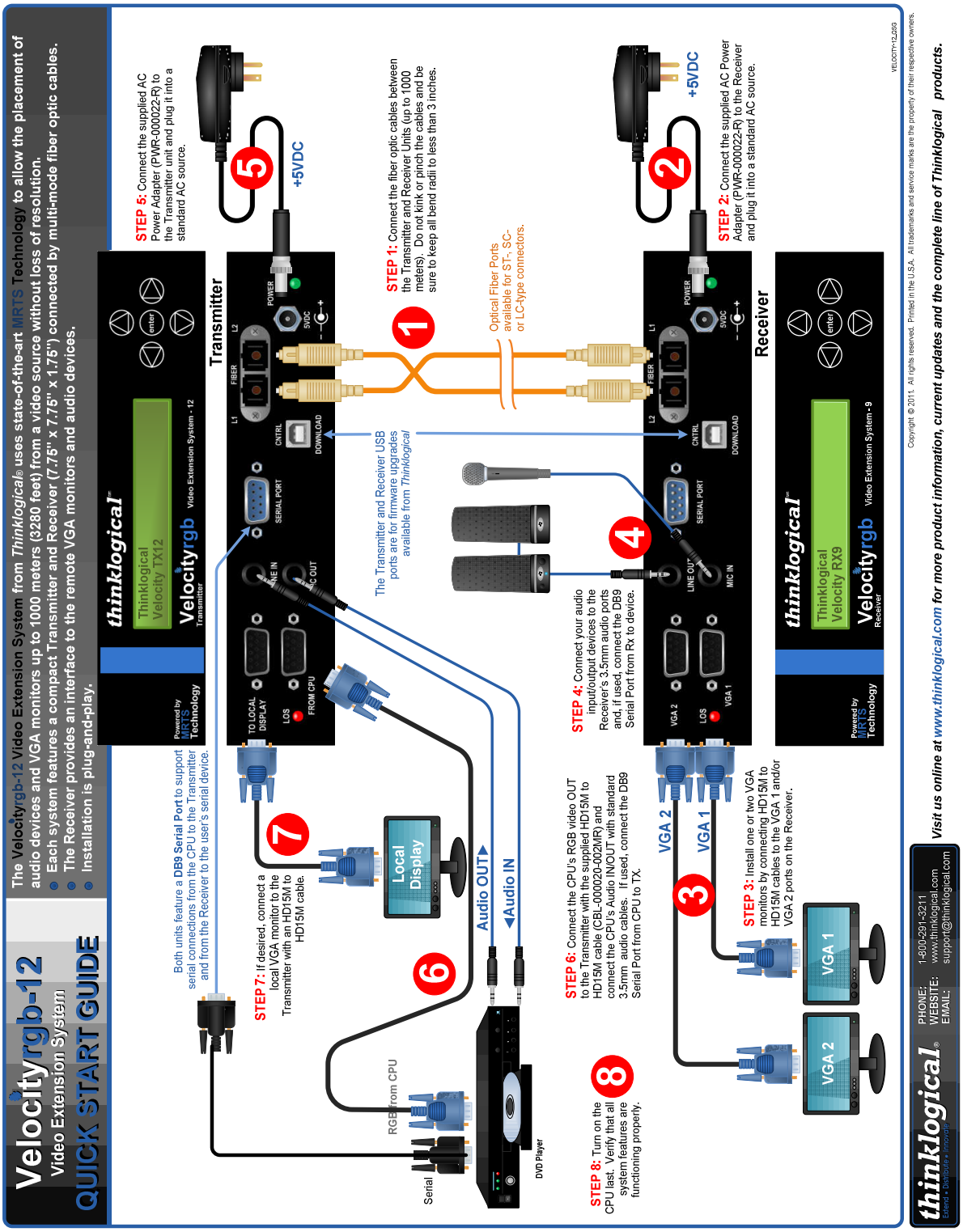
VelocityRGB-9 Quick Start Guide


Velocity rgb-9
Video Extension System
QUICK START GUIDE
STEP 7
Connect the supplied AC Power Adapter (PWR-000022-R) to the Transmitter unit and plug it into a standard AC source.
Power Supply
When lit, the green LED indicates that +5VDC power is applied. (Applies to both Tx and Rx units.)
STEP 4
Connect the fiber optic cables between the Transmitter and Receiver Units (up to 1000 meters). Do not kink or pinch the cables and be sure to keep all bend radii to less than 3 inches.
Optical Fiber Ports available for ST-, SC- or LC-type connectors.
STEP 3
Connect the supplied AC Power Adapter (PWR-000022-R) to the Receiver and plug it into a standard AC source.
Transmitter
Receiver
The Transmitter and Receiver USB ports are for firmware upgrades available from Thinklogical™.
STEP 2
Connect your audio input/output devices to the Receiver's 3.5mm audio ports and, if used, connect the DB9 Serial Port from Rx to device.
Both units feature a DB9 Serial Port to support serial connections from the CPU to the Transmitter and from the Receiver to the user's serial device.
When lit, the LOS (Loss Of Signal) LED on each unit indicates loss of a valid video signal.
STEP 5
Connect the CPU's RGB video OUT to the Transmitter with the supplied HD15M to HD15M cable (CBL-000020-002MR) and connect the CPU's audio IN/OUT with standard 3.5mm audio cables. Connect the DB9 Serial Port from CPU to TX, if used.
STEP 6
If desired, connect a local VGA monitor to the Transmitter with an HD15M to HD15M cable.
Local Display
STEP 1
Install one or two VGA monitors by connecting their HD15 cables to the VGA 1 and/or VGA 2 ports on the Receiver.
VGA 1
VGA 2
RGB from CPU
Audio OUT
Audio IN
STEP 8
Turn on the CPU last. Verify that all system features are functioning properly.
Local Keyboard and mouse

VelocityRGB-10 Quick Start Guide


Velocityrgb/dvi-10 Extension System QUICK START GUIDE
(VEL-AV0M10-LCTX) Transmitter
(VEL-AV0M10-LCRX) Receiver
FRONT PANEL TX
REAR PANEL TX
REAR PANEL RX
FRONT PANEL RX
Power Supply
STEP 5: Connect the supplied 5VDC 4A Power Adapter (PWR-000022-R) to the Transmitter unit and plug it into a standard AC source.
The Transmitter and Receiver USB ports are for firmware upgrades available through Thinklogical.
STEP 7: Connect an optional local RGB or DVI monitor to the Transmitter's RGB/DVI OUT port.
Local RGB/ DVI Display
STEP 4: Connect your audio, stereo and serial devices to the Receiver's peripheral device ports.
Audio OUT
Mic IN
Stereo OUT
STEP 2: Connect the supplied 5VDC 4A Power Adapter (PWR-000022-R) to the Receiver and plug it into a standard AC source.
RGB/DVI to Tx
STEP 1: Connect multi-mode fiber optic cables between the Transmitter and Receiver Units (up to 1000 meters). Connect L1 to L1 and L2 to L2. Do not kink or pinch the cables and be sure to keep all bend radii to less than 3 inches.
L1: Video & Data Tx to Rx
L2: Data Rx to Tx
RGB/DVI from CPU
Stereo IN
Audio IN
Audio OUT
Serial
STEP 6: Connect the CPU's RGB/DVI video OUT to the Transmitter's RGB/DVI IN port with one of the supplied video cables. Connect the 3.5mm Audio IN/OUT, DB9 Serial and BNC Stereo 3D sources to the TX peripheral device inputs with the supplied cables.
RGB/DVI OUT DDC
RGB/DVI OUT
STEP 3: Install one or two RGB/DVI monitors by connecting to the RGB/DVI OUT DDC and/or RGB/DVI OUT (non-DDC) ports on the Receiver.
RGB/DVI OUT DDC
RGB/DVI OUT
STEP 8: Turn on the CPU last. Verify that all system functions are operating properly.
Thinklogical Velocity TX10
Thinklogical Velocity RX10
Extension System-10
Transmitter
Receiver
Powered by MATRIX Technology
VELOCITY-10_QSG_manual_Rev_A

VelocityRGB-12 Quick Start Guide


Velocityrgb-12
Video Extension System
QUICK START GUIDE
The Velocityrgb-12 Video Extension System from Thinklogical® uses state-of-the-art MRTS Technology to allow the placement of audio devices and VGA monitors up to 1000 meters (3280 feet) from a video source without loss of resolution.
Each system features a compact Transmitter and Receiver (7.75" x 7.75" x 1.75") connected by multi-mode fiber optic cables.
The Receiver provides an interface to the remote VGA monitors and audio devices.
Installation is plug-and-play.
Transmitter
Receiver
Thinklogical Velocity TX12
Thinklogical Velocity RX9
Velocityrgb Video Extension System - 12
Velocityrgb Video Extension System - 9
STEP 1: Connect the fiber optic cables between the Transmitter and Receiver Units (up to 1000 meters). Do not kink or pinch the cables and be sure to keep all bend radii to less than 3 inches.
Optical Fiber Ports available for ST-, SC- or LC-type connectors.
STEP 2: Connect the supplied AC Power Adapter (PWR-000022-R) to the Receiver and plug it into a standard AC source.
+5VDC
STEP 3: Install one or two VGA monitors by connecting HD15M to HD15M cables to the VGA 1 and/or VGA 2 ports on the Receiver.
VGA 1
VGA 2
STEP 4: Connect your audio input/output devices to the Receiver's 3.5mm audio ports and, if used, connect the DB9 Serial Port from Rx to device.
LINE OUT
MIC IN
The Transmitter and Receiver USB ports are for firmware upgrades available from Thinklogical
STEP 5: Connect the supplied AC Power Adapter (PWR-000022-R) to the Transmitter unit and plug it into a standard AC source.
STEP 6: Connect the CPU's RGB video OUT to the Transmitter with the supplied HD15M to HD15M cable (CBL-000020-002MR) and connect the CPU's Audio IN/OUT with standard 3.5mm audio cables. If used, connect the DB9 Serial Port from CPU to TX.
RGB from CPU
Audio OUT
Audio IN
Serial
DVD Player
Local Display
STEP 7: If desired, connect a local VGA monitor to the Transmitter with an HD15M to HD15M cable.
Both units feature a DB9 Serial Port to support serial connections from the CPU to the Transmitter and from the Receiver to the user's serial device.
STEP 8: Turn on the CPU last. Verify that all system features are functioning properly.
Powered by MRTS Technology
thinklogical
PHONE: 1-800-291-3211
WEBSITE: www.thinklogical.com
E-MAIL: support@thinklogical.com
Visit us online at www.thinklogical.com for more product information, current updates and the complete line of Thinklogical products.
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VELOCITY-12-2.0.0